Any one who is familiar with this class of literature will probably infer that the following sentences were also "made in Germany."

> "Trimen also observed that an Acacia tree with exuding sap, the sporting ground of the sucking insects, was also visited by predatory Mantids, which found here numerous victims" (p. 40).
>
> "I regard these females therefore, not as does Butler, as mimics of the *Euplœæ*, but as normally coloured, for they resemble closely other *Satyridæ*" (p. 32).
>
> "As much as the coloration of the wings varies within narrow limits in different species of this genus, it is, however, in general similar" (p. 26).
>
> "In the Neotropic genus *Phoraspis*, Serv., the forms with a light longitudinal fillet on the indistinctly ribbed elytra and with pronotum cleared to a glassy appearance on the sides, between which the head appears, resemble somewhat the 'Lampyridæ'" (p. 7).

Seitz is made to say that a nauseous odour is emitted by a certain butterfly (*Eueides*) "only when danger threatens or on direct insult." He is thus made to describe the evidence on which this conclusion was based: "I approached two of these insects during copulation and smelled of them, but could perceive nothing." Such conduct is evidently regarded as not sufficiently insulting to produce the desired effect (pp. 56, 57).

Schilde is represented as saying

> "that the (mimetic) *Pieris* 'would become extinct if it were not otherwise compensatingly protected in its own garb, long before the first traces of the aping of the gaily-colored species had been teleologically selected on its white wings'" (p. 124).

The mimetic female *Pierinæ*, we are told on p. 66,

> "flutter in low flight and little exposed through the thickets visiting at most the edge of the forest, where their models suck the juices of flowers."

Haase argues that in certain butterflies transparency is even more effectual for protection than a conspicuous "warning" appearance; the metaphor in which he expresses this opinion is thus rendered on p. 98:

> "We must conclude that for protection against the obstinate enemies a 'tarn cap' is more advantageous than a 'gorgon's head.'"

We have now to inquire whether the translator possessed the requisite knowledge of the details of the subject-matter. The following examples will show that he must have been absolutely ignorant of it; and the blunders due to this cause are far more injurious than the others already treated of, and detract in a still more serious manner from the scientific value of the work. The want of technical knowledge causes many words and sentences to be rendered in a manner entirely at variance with their true meaning.

Thus the hooked hairs of certain crabs are spoken of as "angling hairs" (p. 151). The *Attidæ* are said to "suffer greatly from the persecutions of their spider-enemies" (p. 5): the author evidently stated that they suffered from the attacks of the "enemies of spiders." The "lepidopterologist" (p. 123) may well fail to recognise the familiar cyanide bottle under the description of "potassium glass" (p. 47).

Even the familiar words "Lepidoptera," "butterfly," "moth," are sometimes used in an entirely wrong sense. Thus on p. 138 we are told that "Mimicry of members of *other genera of the same subfamily* occurs not only in the Lepidoptera, but also among *Danainæ*" and several other well-known Lepidopterous sub-families. Speaking on p. 37 of a moth (*Chalcosia*), the author is made to say that "the pinned insect was more tenacious of life than any other butterfly with which I am acquainted." On p. 146 the common hawk-moth *Smerinthus ocellatus* is spoken of as a butterfly. The "empty pupal case of a butterfly," alluded to on pp. 147 and 154, should certainly be the "empty cocoon of a moth." Again, the word for butterfly is sometimes (p. 38) rendered by *Papilionidæ*. By a similar blunder, on p. 41, the genus *Papilio* is itself excluded from the *Papilionidæ*.

Instead of rendering the German descriptive terms by the corresponding English ones, the translator merely attempts a literal translation of the former. The absurd results of this procedure are so thickly spread over the book, that they form one of its worst features. Thus we are constantly told of "shaded," "secondarily shaded," and "cleared" wings, of "fillets" (*e.g.* "four orange fillet remnants," p. 7, "cellular fillets," p. 29), and of "limbal" markings. We read of the "yellow flanks" of a female Papilio (p. 93), and of "smeary" larvæ (p. 65). A "New Hollandish" genus (p. 133), the "lemon butterfly" (p. 148), and the "stem" of the aculeate abdomen (p. 134), are doubtless intelligible to an entomologist, although not the terms we should employ in this country.

I should wish, in conclusion, to express regret that Haase's painstaking and, in many respects, useful work—marred as it is by excessive arrogance, by its imperfect acquaintance with the literature of the subject, by its numerous errors, and by the rashness and frequent absurdity of its confident conclusions—should have been introduced to the English-speaking public in a form which is completely destructive of such merits as it may be fairly claimed to possess.

E. B. P.

THE ACTION OF MEDICINES.

Lectures on the Action of Medicines: being the Course of Lectures on Pharmacology and Therapeutics delivered at St. Bartholomew's Hospital during the Summer Session of 1896. By T. Lauder Brunton, M.D., D.Sc., LL.D., F.R.S., F.R.C.P., &c. 8vo. Pp. xv + 673. (London: Macmillan and Co., Ltd. New York: The Macmillan Company, 1897.)

DR. BRUNTON, in his preface to this substantial volume, writes as follows:

> "I acknowledge at once that the lectures are imperfect. They are redundant in some parts and scanty in others; they are not well adapted for the purpose of cramming, and any man who tries to pass an examination upon them alone will not be at all likely to get the maximum number of marks. But I do not think that lectures are intended for the purpose of cramming. Their use is not to supply the student with all the information he needs, but to awaken his attention, to excite his interest, to impress upon him certain points which will form a nucleus for his knowledge, and around which he may afterwards group more information."

Wise and experienced teachers will regard as a merit, what the author thus modestly admits as an

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imperfection. His lectures, like Sir Thomas Watson's and others that are placed among the classics of medicine, do not contain a complete statement of all that can be said on their subject; but they do excite the reader's interest, they do arrest his attention, they make him perforce reflect for himself, and they in this way truly subserve his education in the best sense of that much-abused word.

The lectures must have been delightful to listen to; every sentence bears the impress of their author's genial personality. Nothing connected with drugs and their actions is without interest to him; and he assumes, and rightly assumes, that his hearers must share his interest. His style is artistically simple and direct; allusions, illustrations, analogies, experiences, anecdotes, are introduced at every turn, and the light of his gentle humour plays effectively over many a passage. The old-fashioned *materia medica* lecture used to be regarded as the driest and dullest of the medical course: Dr. Brunton has transfigured it into one of the brightest. It is his special merit that the change has been brought about without the least sacrifice of scientific method or scientific precision; for the whole book is instinct with the spirit of modern physiology and pathology. Empirical *axiomata media* cannot yet be wholly excluded from therapeutics, but Dr. Brunton is never content with a mere induction from experience when it is possible to suggest a rational explanation. And if the suggestion is capable of being tested by experiment, the experiment is made.

> "I was once demonstrating the action of ammonia before a class here many years ago, and showed that if you held either ammonia or chloroform before the nose of a rabbit the heart stopped instantaneously. This stoppage of the heart takes place reflexly through the fifth nerve as an afferent, and through the vagus as an efferent nerve. After the lecture was over, a student came up to me and said: 'If ammonia held before the nose stops the heart, how is it that it is of use in fainting? It ought to be exceedingly bad in fainting, and yet everybody knows it is good.' Well, I simply did not know. I said: 'I think it may possibly be that it tends at the same time to cause a deep inspiration, and thus stimulates the heart indirectly.' But I was not satisfied with this explanation, and so I put the question to the test of experiment. I found the answer to be this: At the same time that you stop the heart through the vagus by ammonia or any other irritating volatile substance held before the nose, you stimulate reflexly the vaso-motor centre, cause contraction of the arterioles, and raise the blood-pressure enormously."

This specimen is typical; it can be paralleled by a multitude of others, and it exemplifies at once the style and the spirit of Dr. Brunton's teaching.

The general plan of the book follows the lines of the schedule recently adopted by the Royal College of Physicians as defining the scope of an examination in pharmacology for students aspiring to their licence. Before, however, any examination had been held, a retrograde step was taken by a majority of the Fellows, and this special examination was abolished. Among the grounds alleged for so unusual a course were the supposed vagueness of the limits of the science, and the absence of appropriate text-books. It cannot be doubted that, had the present work been then accessible to students, these grounds of objection would have proved untenable. "The action of medicinal agents on the body in health and disease" forms, indeed, the essential scientific foundation for the "practical art of therapeutics" which every medical licentiate is assumed to have acquired; without this foundation he must needs be a mere empiric. The author has shown that the ascertainable facts in reference to medicinal action constitute already a coherent and orderly body of knowledge, and that future progress in rational treatment is dependent on the pursuit of the methods of scientific pharmacology in this sense of the term. He has furnished the student with an excellent guide to both facts and methods, and has thus removed the last excuse for the maintenance of mere rule-of-thumb tradition. It is to be hoped that, at no distant day, the Royal College will reconsider its last decision in the light of better knowledge and broader conceptions of medical education.

In accordance with the plan of the above-mentioned schedule, the actions of medicines are first considered from a physiological point of view, as they affect the various functions and systems of the body, normal or morbid. The movements of the alimentary canal and digestion; the composition of the blood, nutrition and metabolism; the heart and blood-vessels, and the circulation; disorders of the circulatory function, such as inflammation; absorption of inflammatory products; secretion and excretion; respiration; the nervous system and sleep; the sensory functions and pain; the reflex and motor activities of the nervous system; the regulation of bodily temperature and fever; specific poisons and infections; all of these are capable of being altered, modified, or controlled by medicinal agents, and the mode in which the latter exert their special action and produce their recognised effects is fully set forth.

But in many cases the practitioner has to ask himself not only what agents at his command are capable of modifying a given function in a desired way, but also what organs or functions may be affected by a given remedy administered in a particular manner. It is therefore necessary again to traverse the ground, at least in part, arranging the subject-matter under the heads of the chief medicines and therapeutic methods in ordinary use, and summarising their numerous primary and secondary actions on the body at large. The last half-dozen chapters do this clearly and succinctly. There is perforce some repetition of the earlier chapters; but the student is made to feel that not a page could be dispensed with, and the book ends long before his attention is fatigued or his interest exhausted.

It would, however, be a mistake to regard the book as good for students only: it is full of wise aphorisms and sagacious hints of the greatest value to men engaged in actual practice. There is scarcely a page from which even a practitioner of long and wide experience could not cull a suggestion, leading to the better use of his familiar tools, or to the elucidation of some old-standing puzzle. Alike to the student who is learning the subject for the first time, to the medical man in search of light and leading in the perplexities of treatment, and to the "intelligent reader" who desires to appreciate the advances made by modern medicine to a place among the sciences, we can cordially commend this fascinating work.

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